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Claims

1. A personally portable vacuum desiccator comprising:

- moisture trap, the trap further comprising a desiccator cartridge having an interior chamber containing a trapping agent, and an inlet port and an outlet port in gas/liquid communication with the interior chamber;

- a vacuum pump member having a low pressure port and an exhaust port, the low pressure port in gas/liquid flow communication with the outlet port of the desiccator cartridge and with the exhaust port vented to atmosphere, and the vacuum pump member being operable to provide a low vacuum pressure to the interior chamber;

- an electric motive means in communication with the vacuum pump member and operative to drive the vacuum pump member; and

- an electrical control circuit, including an electrical power source, the control circuit in electrical communication with and operative to control operation of the electric motive means.

20 2. The personally portable vacuum desiccator of claim 1, further comprising a single passage gas/liquid flow path delivery tube, having an input end and an output end, the output end being connected to the inlet port of the desiccator cartridge.

25 3. The personally portable vacuum desiccator of claim 1, further comprising a housing containing the electric motive means and the electrical control circuit.

4. The personally portable vacuum desiccator of claim 1, further comprising a housing containing the electric motive means and the electrical control circuit and at least one additional element selected from the group consisting of the desiccator cartridge and the vacuum pump member.
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5. The personally portable vacuum desiccator of claim 1, wherein the vacuum pump member is integral with the desiccator cartridge.
- 10 6. The personally portable vacuum desiccator of claim 1, wherein the electric motive means includes an electric motor mechanically coupled to the vacuum pump member.
- 15 7. The personally portable vacuum desiccator of claim 1, wherein the electric motive means includes an electric motor magnetically coupled to the vacuum pump member.
8. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes an electrical power source comprising a battery.
- 20 9. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes an electrical power source comprising a battery, and the battery is removable from the electrical control circuit and replaceable.
- 25 10. The personally portable vacuum desiccator of claim 1, further comprising a one-way valve disposed proximate the inlet port of the desiccator cartridge, the one-way valve preventing gas/liquid and particulate flow out of the inlet port.

11. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes a moisture sensor for detecting the presence of moisture proximate the low pressure port of the vacuum pump member.

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12. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes a timer circuit for intermittently operating the electric motive means.

10 13. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes a vacuum pressure sensor for detecting a vacuum pressure in the interior chamber of the desiccator cartridge.

15 14. The personally portable vacuum desiccator of claim 1, wherein the electrical control circuit includes a pressure differential sensor for sensing a difference in pressure between the inlet and outlet ports of the desiccator cartridge.

20 15. The personally portable vacuum desiccator of claim 1, wherein the desiccator cartridge is removable from the vacuum desiccator and replaceable.

25 16. The personally portable vacuum desiccator of claim 1, wherein components in gas/liquid flow communication are replaceable.

17. The personally portable vacuum desiccator of claim 1, wherein the desiccator cartridge contains a trapping agent selected from the group consisting of: a desiccant, an adsorbent and an absorbent.

18. The personally portable vacuum desiccator of claim 1, further comprising a micro-filter positioned after the outlet port of the desiccator cartridge and before the exhaust port of the vacuum pump member, the micro-filter blocking the passage of bacteria.

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19. The personally portable vacuum desiccator of claim 1, wherein the power source is integrally combined with the desiccator cartridge, and the combined desiccator-power source being installable in and removable from the vacuum desiccator as a single unit.

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20. A personally portable vacuum desiccator comprising:
a desiccator cartridge, the cartridge being removable from the vacuum desiccator and replaceable, and having an interior chamber containing a trapping agent, the trapping agent being a moisture trapping pillow, and an inlet port and an outlet port in gas/liquid communication with the interior chamber, and a one-way valve disposed proximate the inlet port for preventing gas/liquid and particulate flow out of the input port;

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20 a single passage gas/liquid flow pathway having an input end and an output end, the output end being connected to the inlet port of the desiccator cartridge;

25 a vacuum pump member having a low pressure port and an exhaust port, the low pressure port in gas/liquid flow communication with the outlet port of the desiccator cartridge and with the exhaust port vented to atmosphere, and the vacuum pump member being operable to provide a low vacuum pressure to the interior chamber;

an electric motive means in communication with the vacuum pump member and operative to drive the vacuum pump member, the electric motive means including an electric motor coupled to the vacuum pump member; and

5 an electrical control circuit, including an electrical power source, the control circuit in electrical communication with and operative to control operation of the electric motive means, the electrical power source comprising a battery, with the battery being removable from the electrical control circuit and replaceable, and wherein the electrical control circuit includes one or
10 more ancillary circuits selected from the group consisting of: a power circuit for turning the electrical control circuit on and off, a moisture sensor for detecting the presence of moisture proximate the low pressure port of the vacuum pump member, a timer circuit for intermittently operating the electric motive means, a vacuum pressure sensor for detecting a vacuum pressure in the interior chamber of the desiccator cartridge, a pressure differential sensor for sensing a difference in pressure between the inlet and outlet ports of the desiccator cartridge.

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